

Comprehensive, hands-on training that solves real-world problems

RHCE Certification Lab

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DAY ONE	DAY TWO	DAY THREE	DAY FOUR
Introduction	SELinux Permissions	Providing Remote Block Storage	Configuring Link Aggregation and Bridging
Service Manage-Ment and Boot Troubleshooting	Configuring MariaDB Databases	Managing IPv6 Networking	Writing Bash Scripts
Network Port Security			

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DAY ONE

Introduction

Service Management & Boot Troubleshooting

Network Port Security

Introduction

- Welcome
- Course Objectives and Structure
- Classroom Network
- Internationalization

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Welcome to Class

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Course Objectives and Structure

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Orientation to Classroom Network

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Internationalization

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DAY ONE

Service Management & Boot Troubleshooting

Network Port Security

Service Management and Boot Troubleshooting

- Identifying Automatically Started System Processes
- Controlling System Services
- Linux Boot Process
- Repairing Common Boot Issues
- Repairing File System Issues at Boot
- Repairing Boot Loader Issues

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Goal:

To control and monitor system daemons and troubleshoot the Red Hat Enterprise Linux boot process.

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Objectives:

- List system daemons and network services started by the systemd service and socket units.
- Control system daemons and network services using systemctl.
- Describe the Red Hat Enterprise Linux boot process.
- Repair common boot issues.
- Repair file system issues at boot.
- Repair boot loader problems.

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Identifying Automatically Started System Processes

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Practice:
Identify the Status of systemd Units

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Controlling System Services

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Practice: Using systemctl to Manage Services

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The Red Hat Enterprise Linux Boot Process

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Practice:
Selecting a Boot Target

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Repairing Common Boot Issues

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Practice:
Resetting a Lost root Password

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Repairing File System Issues at Boot

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Practice:
Repairing Boot Problems

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Repairing Boot Loader Issues

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Practice:
Repairing a Boot Loader Problem

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Lab:
Controlling Services and Daemons

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DAY ONE

Service Management & Boot Troubleshooting

Network Port Security

Network Port Security

- Managing Firewalld
- Managing Rich Rules
- Masquerading and Port Forwarding
- Adding Custom firewalld Zones and Services

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Goal:

To permit and reject access to network services using advanced SELinux and firewalld filtering techniques.

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Objectives:

- Review firewalld concepts and management commands covered in previous courses.
- Configure more complex firewall configurations using firewalld's support for "rich language rules."
- Describe and implement Network Address Translation (NAT).
- Customize and create predefined firewalld services and zones to simplify configuration.

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Managing Firewalld

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Practice: Configuring a Firewall

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Managing Rich Rules

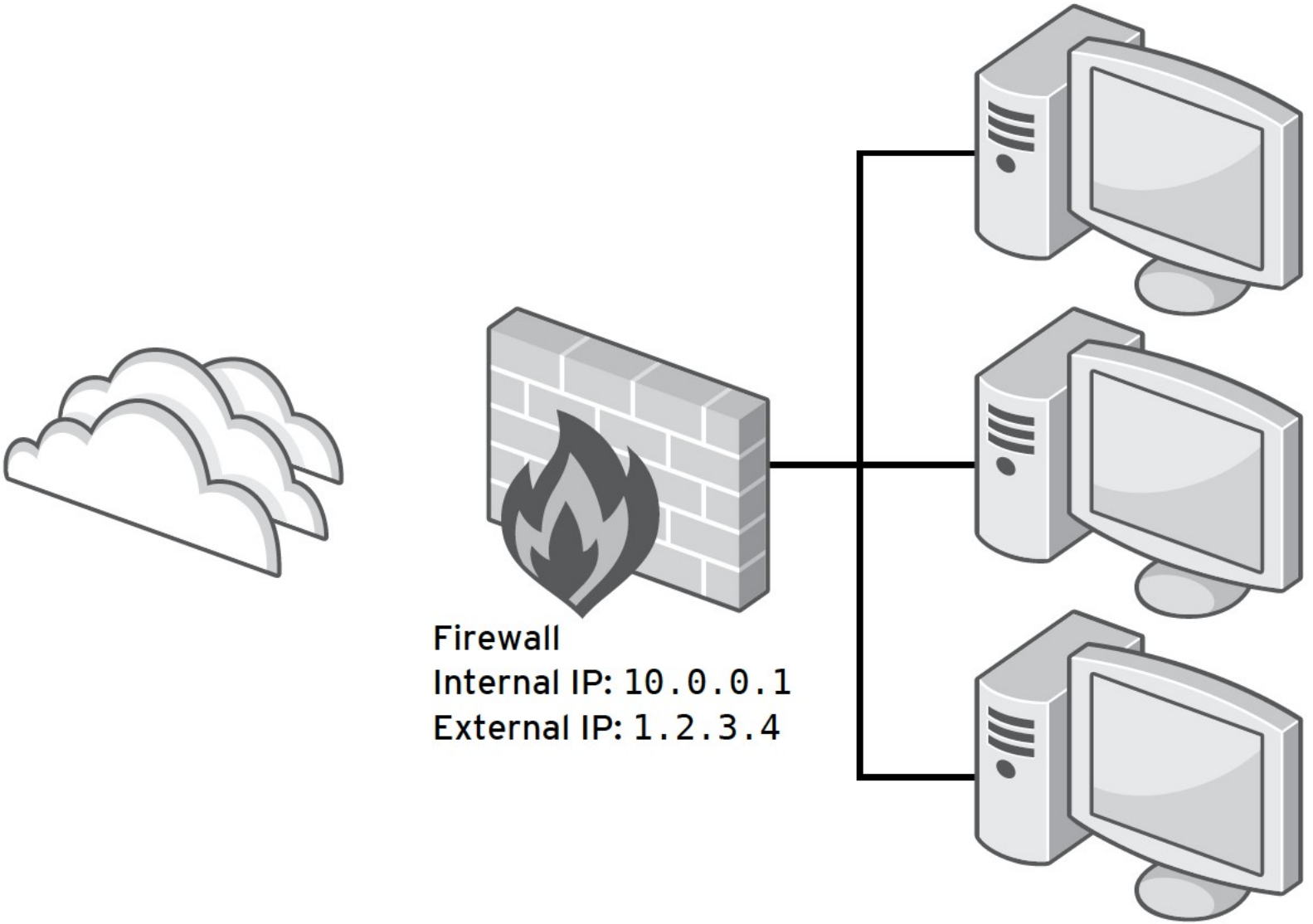
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Practice:
Writing Custom Rules

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Masquerading and Port Forwarding

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Practice: Forwarding a Port

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Adding Custom firewalld Zones and Services

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Practice:
Configure a Custom Firewall

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Lab:
Network Port Security

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DAY TWO

SELinux

MariaDB

SELinux Permissions

- Enabling and Monitoring SELinux
- Changing SELinux Modes
- Changing SELinux Contexts
- Changing SELinux Booleans
- Managing SELinux Port Labeling
- Troubleshooting SELinux

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Goal:

To manage the Security Enhanced Linux (SELinux) behavior of a system to keep it secure in case of a network service compromise.

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Objectives:

- Explain the basics of SELinux permissions.
- Change SELinux modes with setenforce.
- Change file contexts with semanage and restorecon.
- Manage SELinux booleans with setsebool.
- Ensure network ports have the correct SELinux type so that services are able to bind to them.
- Examine logs and use sealert to troubleshoot SELinux violations.

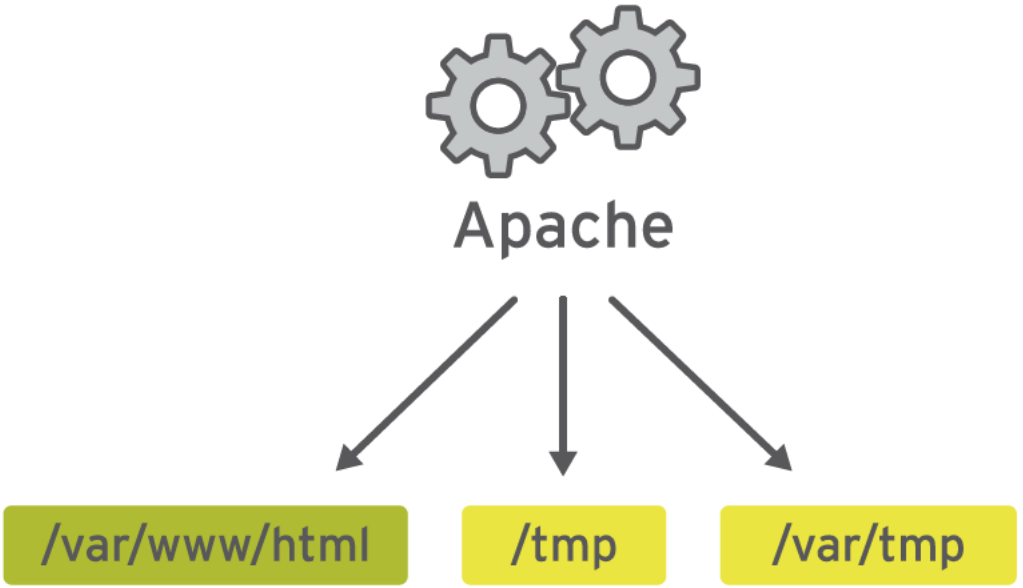
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Enabling and Monitoring Security Enhanced Linux (SELinux)

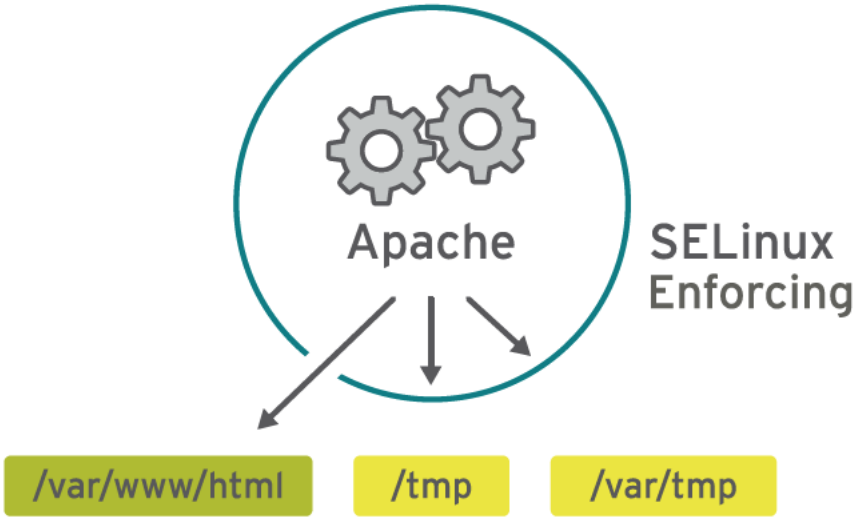
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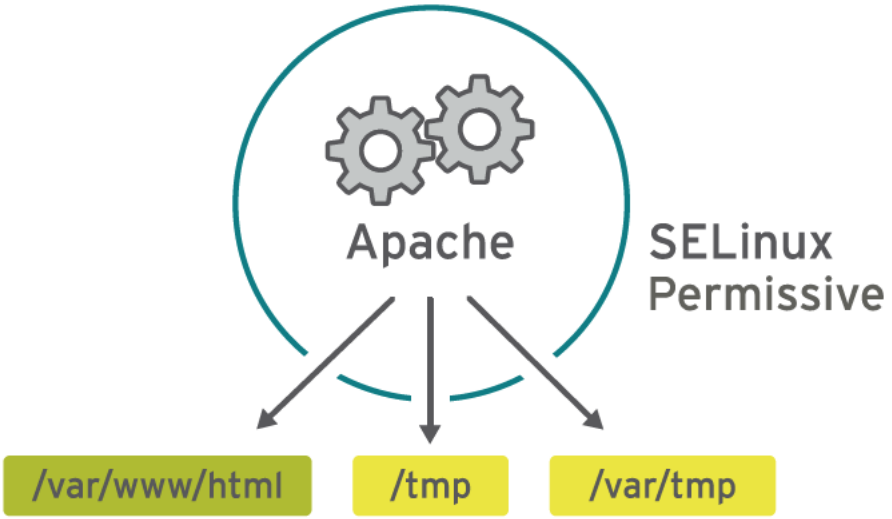
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Quiz:
SELinux Concepts

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Changing SELinux Modes

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Practice:
Changing SELinux Modes

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Changing SELinux Contexts

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Practice:
Changing SELinux Contexts

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Changing SELinux Booleans

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Practice:
Changing SELinux Booleans

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Managing SELinux Port Labeling

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Practice:
Managing SELinux Port Labeling

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Troubleshooting SELinux

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Practice: Troubleshooting SELinux

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Lab:
Managing SELinux Security

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DAY TWO

SELinux

MariaDB

Configuring MariaDB Databases

- Installing MariaDB
- Working with MariaDB Databases
- Managing Database Users and Access Rights
- Creating and Restoring MariaDB Backups

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Goal:

To provide a MariaDB SQL database for use by programs and database administrators.

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Objectives:

- Install MariaDB.
- Configure and administer MariaDB.
- Configure user and access rights.
- Back up and restore MariaDB databases.

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Installing MariaDB

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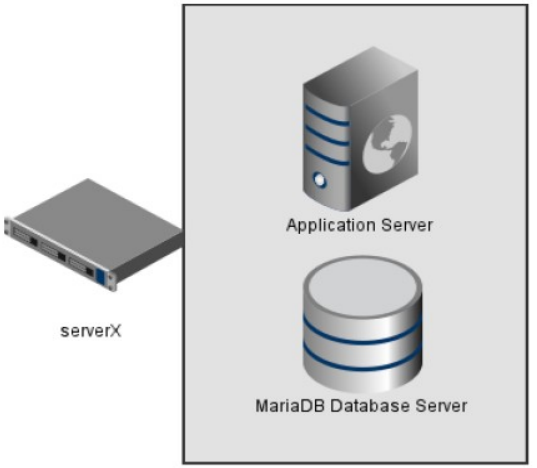
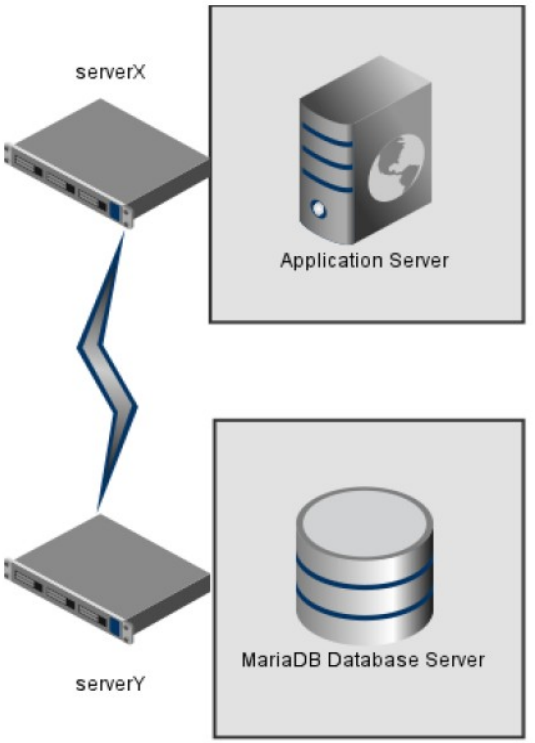


Figure 9.1: Local access to MariaDB



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Practice: Installing MariaDB

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Working with MariaDB Databases

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Quiz:
MariaDB Commands

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Managing Database Users and Access Rights

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Practice: Managing Users

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Creating and Restoring MariaDB Backups

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Practice:
Restoring a MariaDB Database from Backup

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Lab:
Configuring MariaDB Databases

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DAY THREE

Remote Block Storage

IPv6 Networking

Providing Remote Block Storage

- iSCSI Concepts
- Providing iSCSI Targets
- Accessing iSCSI Storage

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Goal:

To provide and use networked iSCSI block devices as remote disks.

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Objectives:

- Explain at a high level how iSCSI is used to provide remote access to block devices.
- Provide remote access using a local disk as a LUN of an iSCSI storage target.
- Access remote storage using an iSCSI initiator and prepare it for use.

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iSCSI Concepts

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Quiz:
iSCSI Concepts

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Providing iSCSI Targets

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Practice:
Providing iSCSI Targets

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Accessing iSCSI Storage

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Practice:
Accessing iSCSI Storage

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Lab:
Providing Block-based Storage

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DAY THREE

Remote Block Storage

IPv6 Networking

Managing IPv6 Networking

- Review of IPv4 Networking Configuration
- IPv6 Networking Concepts
- IPv6 Networking Configuration

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Goal:

To configure and troubleshoot basic IPv6 networking on Red Hat Enterprise Linux systems.

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Objectives:

- Review how to configure IPv4 networking in RHEL 7
- Explain the basic concepts of IPv6 networking and read and write condensed IPv6 addresses
- Configure IPv6 networking using command-line tools and configuration files

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Review of IPv4 Networking Configuration

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Practice:
Configuring IPv4 Networking

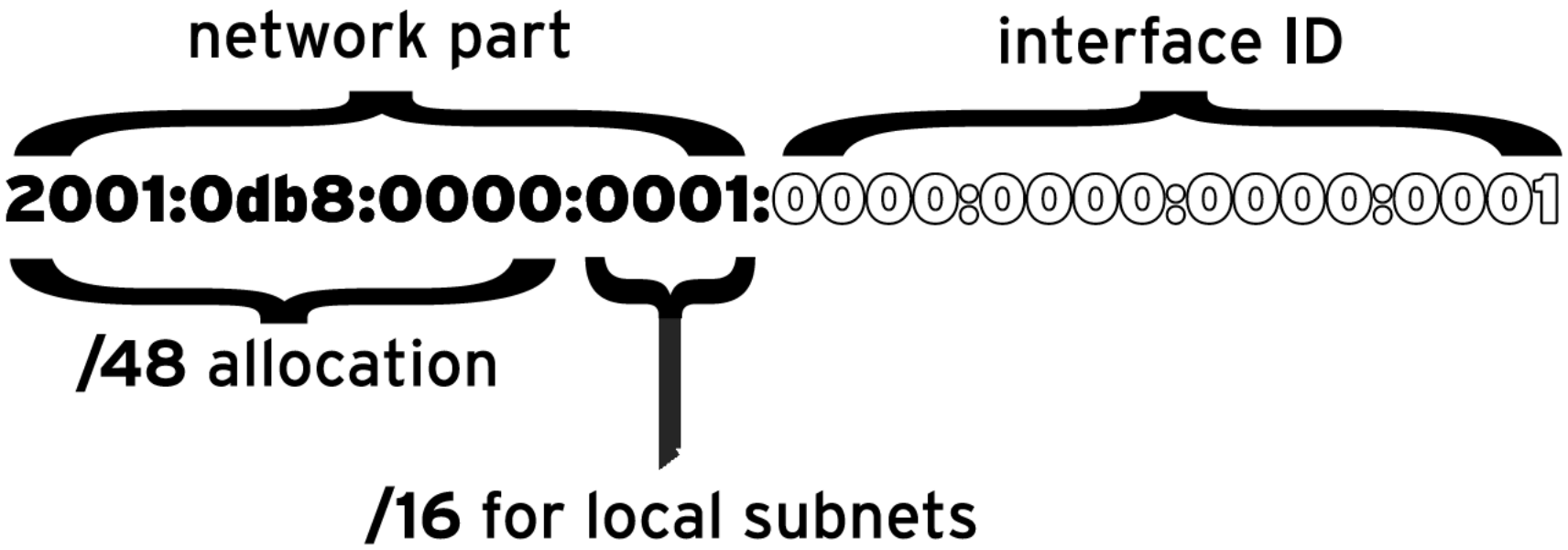
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IPv6 Networking Concepts

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IPv6 address is **2001:db8:0:1::1/64**

Allocation from provider is **2001:db8::/48**



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Quiz:
Interpreting IPv6 Addresses

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IPv6 Networking Configuration

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Practice:
Configuring IPv6 Networking

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Lab:
Managing IPv6 Networking

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DAY FOUR

Link Aggregation and Bridging

Writing Bash Scripts

Configuring Link Aggregation and Bridging

- Configuring Network Teaming
- Managing Network Teaming
- Configuring Software Bridges

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Goal:

To configure and troubleshoot advanced network interface functionality, including bonding, teaming, and local software bridges.

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Objectives:

- Use network teaming to provide link redundancy or higher throughput.
- Manage a network team interface.
- Manage local software bridges and associated interfaces.

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Configuring Network Teaming

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Practice:
Configuring Network Teaming

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Managing Network Teaming

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Practice:
Managing Network Teaming

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Configuring Software Bridges

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Practice: Configuring Software Bridges

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Configuring Link Aggregation and Bridging

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DAY FOUR

Link Aggregation and Bridging

Writing Bash Scripts

Writing Bash Basics

- Bash Shell Scripting Basics

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Goal:

To write simple, well-structured shell scripts using Bash's shell expansion features and for-loop construct.

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Objectives:

- To write simple shell scripts using Bash.

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Bash Shell Scripting Basics

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Writing Bash Scripts

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Writing Bash Scripts

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